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(54) Title: ACTIVE SUBSTANCE DELIVERY SYSTEM		
(57) Abstract The present invention relates to compositions comprising a compound containing a nitrogen linked by an ester bond to an active substance radical having an efficient deposition of the active substance radical to a surface followed by delayed release of an active substance to the surface.		

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ACTIVE SUBSTANCE DELIVERY SYSTEM

The present invention relates to compositions comprising a compound containing a nitrogen linked by an ester bond to an active substance radical. Said compositions show an excellent deposition of the active substance radical to a surface followed by delayed release of an active substance to the surface.

It is well known that by using active substances such as alcohols and/or acids often the substances show a difficult controllable activity due to their inherent characteristics. Although the present invention is not limited to fabric softener compositions, but for instance when using fabric softener compositions, one provides the usual compositions with additional perfumes, antiperspirant compounds etc. in order to obtain the desired result after the rinse cycle of laundry washing processes.

In recent years, the need has arisen for more environmentally-friendly materials, and rapidly biodegradable quaternary ammonium compounds have been presented as alternatives to the traditionally used di-long chain ammonium chlorides. Such quaternary ammonium compounds contain long chain alk(en)yl groups interrupted by functional groups such as carboxy groups.

Said materials and fabric softening compositions containing them are disclosed in numerous publications such as EPA 0 040 562, and EPA 239 910;

In EPA 239 910, it has been disclosed that a pH range of from 2.5 to 4.2 provides optimum storage stability to said rapidly biodegradable ammonium compounds.

A disadvantage of above system is the difficulty to control the activity of the active substances such as for instance the perfumes and antiperspirants in the respective softener composition.

Active substances have a poor affinity for surfaces. Once on a surface they are removed due to their water solubility or high volatility and might sometimes lose all of their activity.

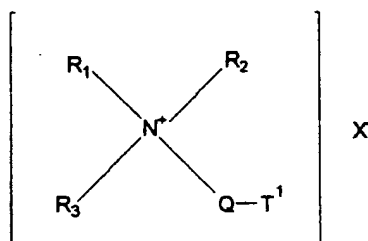
In EP 56152 is described a process for the simultaneous softening and antimicrobial finishing of washed laundry in an aqueous liquor containing fabric-softener quaternary ammonium compounds and antimicrobially active substances by allowing the liquor to act on items of laundry, separating off the liquor from the items of laundry and drying the laundry. The items of laundry are moved around in a liquor which, in addition to at least one standard fabric-softening quaternary compound, contains at least one azole compound as the antimicrobially active substance.

However in this system as described in EP 56152 the activity of the active substance is difficult to control in order to obtain the best desirable results in terms of for instance malodour prevention.

A solution to above-mentioned problem is that the present invention allows to formulate a composition, and in a preferred embodiment a fabric softener composition, wherein the basic principle is to link an active substance such as an alcohol or an acid to a nitrogen via an ester bond.

Active substances which in themselves are not surface substantive are by using the present invention efficiently deposited on the surface. Probably as a consequence of the weak ester linkage the release of the active substance is induced for instance by a hydrolysis process. When the surface is a fabric this development allows surprisingly effective deposition and retention of active substances on fabrics, followed by a slow release of the active substance over time.

The active substance might be an acid or an alcohol. The active is bound via an ester linkage to an alcohol or acid function in the central part of a compound according to the invention wherein the compound has the structural formula:



or an amine precursor thereof

wherein :

R_1 is $Q'-T^1$ or $Q'-T^2$ or T^2 or R_6 ,

R_2 is $Q''-T^1$ or $Q''-T^3$ or T^3 or R_6 ,

$$Q \text{ is } \begin{array}{c} 0 \\ || \\ -R_4 - C - 0 - \end{array}, \text{ or } \begin{array}{c} 0 \\ || \\ -R_4 - 0 - C - \end{array},$$

$$\text{or } \begin{array}{c} 0 \\ || \\ -R_4 - 0 - C - R_5 - C - 0 - \end{array},$$

Q' and Q'' are defined as Q wherein R₄ is R₄' or R₄'' and R₅ is R₅' or R₅'' respectively

R₃ and R₆ are the same or different C₁-C₄ alkyl or C₁-C₄ hydroxyalkyl or H

R₄, R₄' and R₄'' and R₅, R₅' and R₅'' are any (un)substituted acyclic or any (un)substituted mono or poly (hetero)cyclic organic group,

T¹ is an active substance radical,

T² and T³ are (the same or different) C₅-C₃₀ alkyl or alkenyl or aryl, X⁻ is a compatible anion.

T¹ is defined as an active substance radical. With "active substance radical" is meant that part of the compound which, for instance, upon hydrolysis generates the active substance.

If the active substance is an alcohol then the alcohol active might first be reacted with a diacid (or diacid anhydride) to form an acid ester. This product is then linked via the free acid function to the free alcohol function in the central part of the compound according to the invention. Alternatively, the alcohol active is linked directly to a free acid function in the central part of the compound.

The central part in the molecule can be any ethoxylated amine (e.g. triethanolamine, methyldiethanolamine and the like) or it could be a more complex hydroxyfunctionalized amine or quat or a (poly)carboxyfunctionalized amine or quat.

The active substance might be any acid or alcohol one wants to deposit on fabrics. Depending on the application, one can use a monoester, a mixed ester with fatty acid or a polyester of the active substance with the central part of the compound

This system might also be used to deposit an active substance on another substrate than fabrics, e.g. skin, hair or any other surface that one wants to treat.

One application is in perfume delivery in a fabric softener context.

This technology allows very efficient deposition of a perfume ingredient followed by slow release upon hydrolysis of the ester bond linking the active substance to the central part of the molecule.

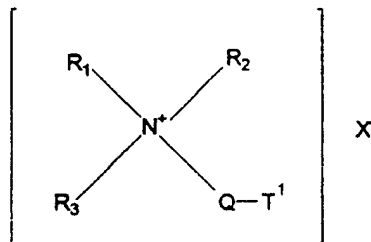
Other potential applications in a fabric softener matrix are biocide delivery (malodour prevention), antiperspirant delivery (in wear malodour prevention) and iron-aid delivery.

This delivery system might depending on the choice of the active substance also find an application outside a fabric softener context: e.g. perfume delivery in a detergent, antiperspirant delivery in a cosmetic product for instance in a deodorant, moldicide delivery in an anti-dandruff shampoo, top note delivery during ironing by release of the volatile top notes during ironing by humidity and/or heat induced hydrolysis, in an ironing-aid, pesticide, or insecticide/insect repellent delivery in a pesticide or corrosion inhibition delivery in a hard surface cleaner.

Detailed description of the invention

Part of the present invention is a composition wherein the compound has a nitrogen present in a quaternary ammonium group and/or amine precursor thereof.

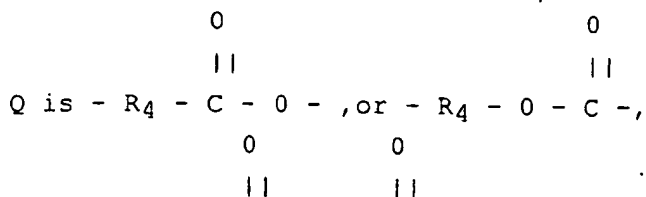
The compound could have the following structural formulas:



wherein :

R_1 is $Q'-T^1$ or $Q'-T^2$ or T^2 or R_6 ,

R_2 is $Q''-T^1$ or $Q''-T^3$ or T^3 or R_6 ,



or $- R_4 - 0 - C - R_5 - C - 0 -$,

Q' and Q'' are defined as Q wherein R_4 is R_4' or R_4'' and

R_5 is R_5' or R_5'' respectively,

R_3 and R_6 are the same or different C_1 - C_4 alkyl or C_1 - C_4 hydroxyalkyl or H,

R_4 , R_4' and R_4'' and R_5 , R_5' and R_5'' are any (un)substituted acyclic or any (un)substituted mono or poly (hetero)cyclic organic group,

T^1 is an active substance radical,

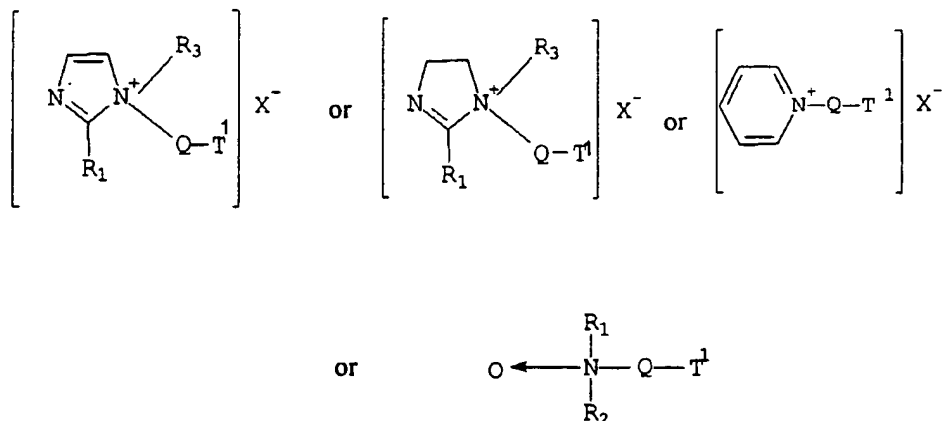
T^2 and T^3 are (the same or different) C_5 - C_{30} alkyl or alkenyl or aryl, X^- is a compatible anion.

The anion is merely present as a counterion of the positively charged quaternary ammonium compounds or protonated amines. The scope of this invention is not considered limited to any particular anion, although the use of some particular anion may be preferred in certain compositions.

By "amine precursors thereof" is meant the secondary or tertiary amines corresponding to the above quaternary ammonium compounds.

The present invention also encompasses a composition comprising a compound containing a nitrogen wherein this nitrogen is present in an imidazolium, imidazolinium or pyridinium group or another cyclic ammonium compound and/or precursor thereof or in an amineoxide group.

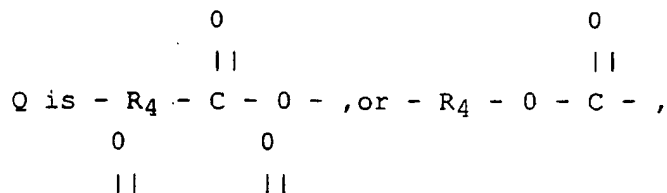
The compound could have the following structural formulas:



wherein:

R₁ is Q'-T¹ or Q'-T² or T² or R₆,

R₂ is Q''-T¹ or Q''-T³ or T³ or R₆,



or - R₄ - O - C - R₅ - C - O - ,

Q' and Q'' are defined as Q wherein R₄ is R₄' or R₄'' and

R₅ is R₅' or R₅'' respectively,

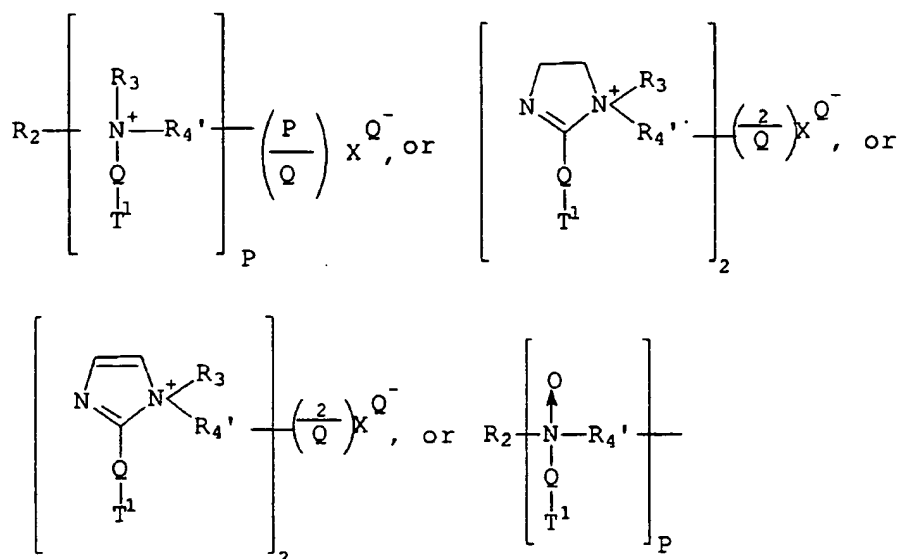
R₃ and R₆ are the same or different C₁-C₄ alkyl or C₁-C₄ hydroxyalkyl or H,

R₄, R₄' and R₄'' and R₅, R₅' and R₅'' are any (un)substituted acyclic or any (un)substituted mono or poly (hetero)cyclic organic group,

T¹ is an active substance radical,

T² and T³ are (the same or different) C₅-C₃₀ alkyl or alkenyl or aryl, X⁻ is a compatible anion.

Part of the invention is also a composition comprising a compound containing several nitrogens wherein the compound has the following structural formulas:



or an amine precursor thereof

wherein :

R_2 is $Q''-T^1$ or $Q''-T^3$ or T^3 or R_6 ,

$$\begin{array}{c}
 \begin{array}{ccc} 0 & & 0 \\ || & & || \\ Q \text{ is } - R_4 - C - O -, & \text{ or } & - R_4 - O - C - , \\ 0 & & 0 \\ || & & || \end{array}
 \end{array}$$

or $- R_4 - O - C - R_5 - C - O -$,

Q'' is defined as Q wherein R_4 is R_4'' and R_5 is R_5'' .

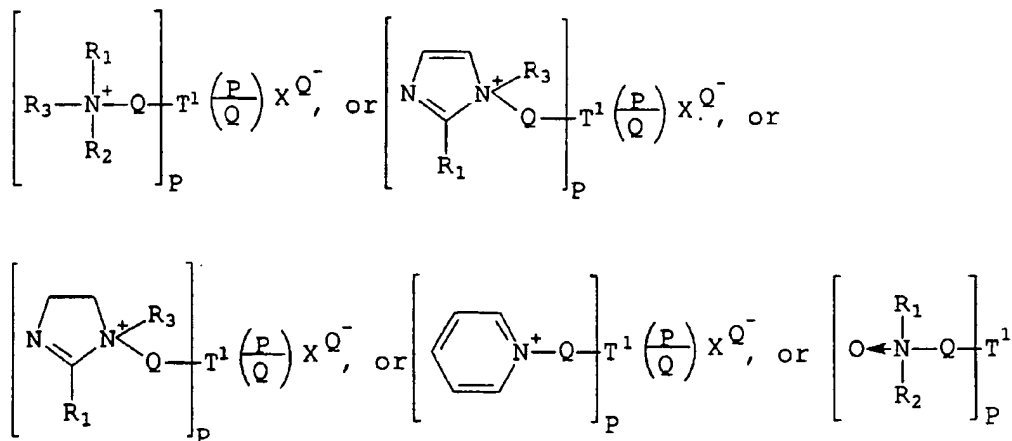
R_3 is R_6 are the same or different C_1-C_4 alkyl or C_1-C_4 hydroxyalkyl or H,

R_4 , R_4' , R_4'' , R_5 and R_5'' are any (un)substituted acyclic or any (un)substituted mono or poly (hetero)cyclic organic group,

T^1 is an active substance radical,

T^2 and T^3 are (the same or different) C_5-C_{30} alkyl or alkenyl or aryl, X^- is a compatible anion, p and q are integer numbers.

Also part of the invention is a composition comprising a compound with any of the following structural formulas :

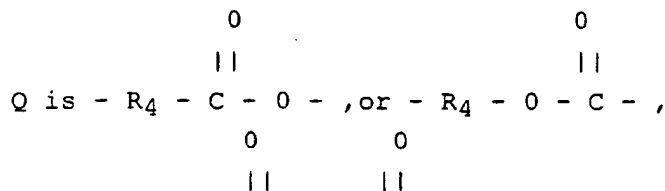


or an amine precursor thereof

wherein:

R_1 is $Q'-T^1$ or $Q'-T^2$ or T^2 or R_6 ,

R_2 is $Q''-T^1$ or $Q''-T^3$ or T^3 or R_6



or $- R_4 - \overset{0}{O} - \overset{0}{\underset{||}{C}} - R_5 - \overset{0}{\underset{||}{C}} - \overset{0}{O} - ,$

Q' and Q'' are defined as Q wherein R_4 is R_4' or R_4'' and

R_5 is R_5' or R_5'' respectively,

R_3 and R_6 are the same or different C_1 - C_4 alkyl or C_1 - C_4 hydroxyalkyl or H,

R_4 , R_4' and R_4'' and R_5 , R_5' and R_5'' are any (un)substituted acyclic or any (un)substituted mono or poly (hetero)cyclic organic group,

T^1 is a polyhydroxy and/or polycarboxy functional active substance radical,

T^2 and T^3 are (the same or different) C_5 - C_{30} alkyl or alkenyl or aryl, X^- is a compatible anion

p is an integer number between 1 and $\frac{MWT^1}{50}$, preferably
between $\frac{MWT^1}{1000}$ and $\frac{MWT^1}{100}$, and q is an integer number.

The active substance according to the invention can be selected from the class of active substances comprising acids or alcohols of natural or synthetic origin.

Furthermore the active substance according to the present invention can be selected from hydroxy of carboxy functional perfume ingredients, bactericides, fungicides, anti perspirants, starch or modified starch, pesticides, insecticides, insect repellants or corrosium inhibitors.

Depending on the application wherein the present composition according to the invention can be used additionally, for instance, conventional fabric conditioner or fabric softener matrix components and additives can be added to the composition.

In another application additionally conventional detergent matrix components and additives can be added.

Also conventional perfume and/or deodorizing matrix components, conventional shampoo/hair conditioner matrix components, pesticide matrix components, or hard-surface cleaner matrix components, can be added to the composition according to the invention.

Depending on the active substance chosen and the respective matrix components the composition can be used as a perfume delivery system, as a biocide delivery system, as a fungicide delivery system, as an antiperspirant delivery system, as an insecticide or insect repellent system or as an iron-aid delivery system.

Ingredients to be used in order to obtain a fabric softener composition are for instance described in EP 239,910.

EXAMPLES

The following examples illustrate the present invention.

Example 1

Synthesis of a compound according to the invention wherein the active substance is geranic acid.

1 mole of geranic acid is reacted with 1 mole of methyldiethanolamine (160°C, 16 hrs, vacuum) to form the ester of the geranic acid with methyldiethanolamine. The reaction mixture is further reacted with 1 mole of stearic acid (160°C, 24 hrs, vacuum) to form the mixed diester with methyldiethanolamine.

The diester is then quaternized using methylchloride adding 15% of isopropanol as quaternizing solvent.

The resulting quaternary ammonium compound can be incorporated in a composition according to the present invention.

Example 2

Synthesis of a compound according to the invention wherein the active substance is citronellol.

1 mole of N-methyl, N,N-diacetic acid Amine is reacted with 0.5 moles of citronellol (150°C, 24 hrs, vacuum). The resulting mixture is further reacted with 1.5 mole of fatty alcohol (150°C, 24 hrs, vacuum). The diester is then quaternized using methylchloride adding 10% of isopropanol as quaternizing solvent. The resulting quaternary ammonium compound can be incorporated in a composition according to the present invention.

Example 3

Synthesis of a compound according to the invention wherein the active substance is isovaleric acid. Assessment of the improved activity.

3.a) Chemical synthesis

1 mole methyldiethanolamine was reacted with 0.2 moles of isovaleric acid (160 °C, 16 hrs, vacuum) to form the monoester of isovaleric acid and methyldiethanolamine.

The reaction mixture was further reacted with 1.8 moles of stearic acid (160 °C, 24 hrs, vacuum) to form the mixed diester.

The diester was then quaternized using methylchloride adding 15% of isopropanol as quaternizing solvent. 1000 gr of this raw material thus contains 850 gr of quaternary ammonium compound and 27.3 gr of isovaleric acid chemically bound to the quaternary ammonium compound.

3.b) Dispersion making

A 7% acidified dispersion of the under 1.a described raw material was prepared.

- 1) 927.3 gr of demineralised water was heated to 65°C and kept at that temperature.
- 2) 2.7 gr of a 10% hydrochloric acid solution was added to the water.
- 3) 70 gr of the raw material described under 1.a was heated to 75°C and added to the acidified water under continuous agitation. Addition time was 1 minute.
- 4) The resulting dispersion was cooled to ambient temperature under continuous agitation.

The dispersion should have a 10% pH of 3.3 ± 0.3 .

The Finished Product contains 0.19% of isovaleric acid chemically bound to the quaternary ammonium compound.

3.c) Product application

2.1 kg of fabrics (60% pure cotton, 40% mixed polyester/cotton) were washed in a AEG öko-lavamat 579 at 60°C (mainwash only) using 180 gr of regular Belgium Ariel detergent.

The load contained 12 terry (cotton) tracers of 30 gr each.

3.c.1 Reference treatment

A reference dispersion was prepared according to the procedure described under 1.b, using 70 gr of standard quaternary ammonium compound (i.e. quaternary ammonium compound synthesized as described in 1.a, without addition of isovaleric acid and using 2 moles of stearic acid) to which 2.73% of isovaleric acid was admixed.

This reference dispersion thus contains 0.19% of free isovaleric acid.

3.c.1.a (Free active, no extra rinse)

110 gr of this reference dispersion was added to the last rinse of the washing machine and 6 of the 12 tracers were removed after the machine had stopped the rinse cycle.

3.c.1.b (Free active, extra rinse)

After the removal of the first 6 tracers, the remaining load was subjected to an extra rinse cycle in the same washing machine. The remaining 6 tracers were removed after the machine had stopped the rinse cycle.

3.c.2) Test treatment

3.c.2.a (EQDS, no extra rinse)

110 gr of the dispersion described under 1.b was added to the last rinse of the washing machine and 6 of the 12 tracers were removed after the machine had stopped the rinse cycle.

3.c.2.b (EQDS, extra rinse)

After the removal of the first 6 tracers, the remaining load was subjected to an extra rinse cycle in the same washing machine. The remaining 6 tracers were removed after the machine had stopped the rinse cycle.

3.d) Fabric grading3.d.1) Tracer storage

The tracers were graded as they were removed from the washing machine (damp). The fabrics were then line dried at ambient temperature and again graded the following day (1 day dry). The tracers were then packed in aluminium foil and stored on a lab bench at ambient temperature. The judges reevaluated after 1 week and 2 weeks storage.

3.d.2) Grading procedure

The tracers were compared in pairs (free, no extra rinse vs EQDS, no extra rinse; free, extra rinse vs EQDS, extra rinse). The pairs were graded blindly by 4 judges. The tracers were presented to the judges in alternating order. The judges used the following scale:

- 0: There is no difference
- 1: I think one smells stronger
- 2: I know one smells stronger
- 3: I know one smells much stronger
- 4: One smells a whole lot stronger.

The test supervisor gave a positive sign to the grade when the EQDS treatment scored stronger, a negative sign when the reference treatment scored stronger.

The average of the different gradings is reported.

3.d.3) Results3.d.3.a) No extra rinse

EQDS vs free isovaleric acid, + indicates stronger smell for EQDS, 0-4 scale.

Damp	-1.5
1 day dry	0
1 week storage	2.5
2 weeks storage	3.0

3.d.3.b) With extra rinse

EQDS vs free isovaleric acid, + indicates stronger smell for EQDS, 0-4 scale.

Damp	0
1 day dry	1.5
1 week storage	2.5
2 weeks storage	3.0

Above mentioned results clearly indicate that the active radical has been effectively deposited to fabrics, was retained on the fabrics during a subsequent rinse and that the active substance was gradually released during fabric storage.

Example 4

The following fabric softener composition containing the compound according to example 1 further illustrates the present invention.

N,N-di(2-tallowoxyl-oxy-ethyl) N,N dimethyl ammoniumchloride	18%
Tallow Alcohol 25 ethoxylate	2%
PolyGlycerolMonoStearate	5.0%
HCl	0.08%
CaCl ₂	0.3%
Perfume	0.5%
Compound according to ex. 1	0.3%
Dye, antifoam, water	Balance

Example 5

The following detergent composition containing the compound according to example 1 further illustrates the present invention.

C11-12 AlkylBenzeneSulfonate (Na)	6.5%
Tallow Alcohol sulfate (Na)	1.0%
Tallow alcohol ethoxylate (EO11)	0.8%
Hydrogenated tallow fatty acid	1.0%
Distearyl methyl amine	3.0%
Dodecyl dimethyl ammonium N-oxide	0.4%
Zeolite	20%
polyethyleneoxide (MW=5MM)	0.05%
Sodiumsulfate	12.7%
Sodiumsilicate	2.0%
Sodiumperborate (4 aq.)	20.0%
Carboxymethylcellulose	0.4%
Polyacrylate (MW=4000-5000)	3.0%
Enzymes (proteases, amylase, cellulase)	0.3%
Optical brightener	0.25%
Ethylenediamine tetramethylene phosphonic acid	0.1%
Tetraacetyl ethylenediamine	1.5%
Silicone/silica suds suppressor	0.2%
Montmorillonite clay	10%
Perfume	0.2%
Compound of example 1	0.5%

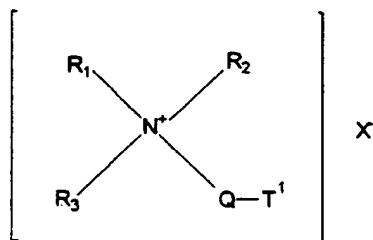
Example 6

The following hair conditioner composition containing the compound according to example 1 further illustrates the present invention.

Tallowalcohol ethoxylate (TAE11)	2.0%
Dimethyl benzyl stearyl ammoniumchloride	1.0%
CetylMonoGlyceride	2.0%
Cetyl Alcohol	2.5%
Methyl Hydroxypropyl cellulose	0.7%
Quaternized hydroxyethylcellulose	0.5%
Hydrochloric acid	0.2%
Perfume	0.2%
Compound according to ex. 1	0.3%
Dye, preservative, water	Balance

What is claimed is:

1. A composition comprising a compound containing a nitrogen linked by an ester bond to an active substance radical having an efficient deposition of the active substance radical to a surface followed by delayed release of an active substance to the surface.
2. A composition according to claim 1 wherein the compound has a nitrogen present in a quaternary ammonium group and/or an amine precursor thereof.
3. A composition according to claim 2 wherein the compound has the following structural formula:



or an amine precursor thereof

wherein :

R_1 is $Q'-T^1$ or $Q'-T^2$ or T^2 or R_6 ,

R_2 is $Q''-T^1$ or $Q''-T^3$ or T^3 or R_6 ,

$$Q \text{ is } \begin{array}{c} 0 \\ || \\ -R_4 - C - O - \end{array}, \text{ or } \begin{array}{c} 0 \\ || \\ -R_4 - O - C - \end{array},$$

or $-R_4 - O - C - R_5 - C - O -$,

Q' and Q'' are defined as Q wherein R_4 is R_4' or R_4'' and

R_5 is R_5' or R_5'' respectively,

R_3 and R_6 are the same or different C_1 - C_4 alkyl or C_1 - C_4 hydroxyalkyl or H;

R_4 , R_4' and R_4'' and R_5 , R_5' and R_5'' are any (un)substituted acyclic or any (un)substituted mono or poly (hetero)cyclic organic group,

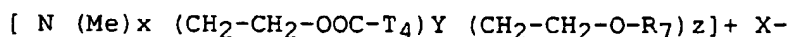
T^1 is an active substance radical,

T^2 and T^3 are (the same or different) C_5 - C_{30} alkyl or alkenyl or aryl, X^- is a compatible anion.

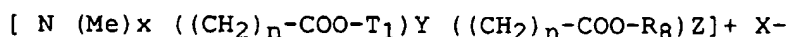
4. A composition according to claim 3 wherein R_4 is $(CH_2)_n$ or $(CH_2-CH_2-O)_nCH_2-CH_2-$ and R_5 is C_1 - C_4 alkyl or alkenyl or aryl and n is an integer between 1 and 4.

5. A composition according to claim 3 wherein R_4 contains one or more hydroxy and/or carboxy and/or ester functions.

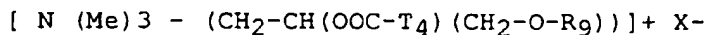
6. A composition according to claim 3 wherein the compound is:



or



or



or



or an amine precursor of one of the above,

Where $x+y+z = 4$

n is an integer between 1 and 4

and R_7 is H or $-OC-T_2$; R_8 is H or T_2 ; R_9 is R_7 or $-OC-T_4$

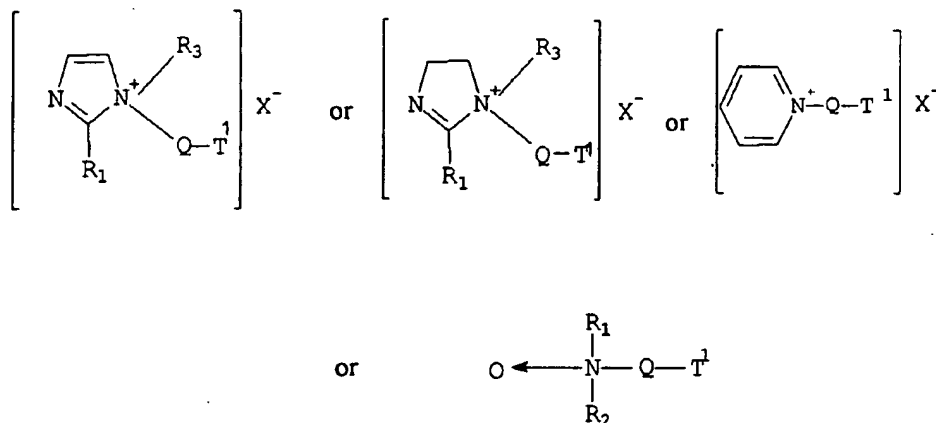
T_2 is defined as in claim 3,

T_4 is T_1 as defined in claim 3, or is an active substance radical that, upon hydrolysis, generates an active substance and a diacid and

X^- is Chloride or MeSulfate,

7. A composition according to claim 1 comprising a compound containing a nitrogen, wherein this nitrogen is present in a cyclic ammonium compound and/or in an amine precursor thereof or in an amineoxide group.

8. A composition according to claim 7 wherein the compound has the following structural formula:

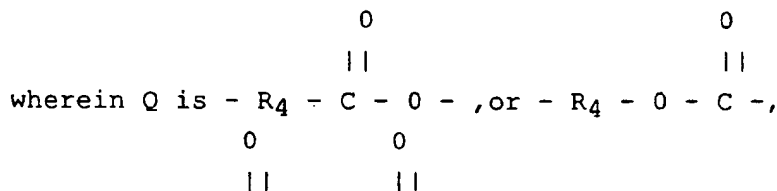


or an amine precursor thereof

wherein :

R₁ is Q'-T¹ or Q'-T² or T² or R₆,

R₂ is Q"-T¹ or Q"-T³ or T³ or R₆,



or - R₄ - O - C - R₅ - C - O - ,

Q' and Q" are defined as Q wherein R₄ is R₄' or R₄" and

R₅ is R₅' or R₅" respectively,

R₃ and R₆ are the same or different C₁-C₄ alkyl or C₁-C₄ hydroxyalkyl or H,

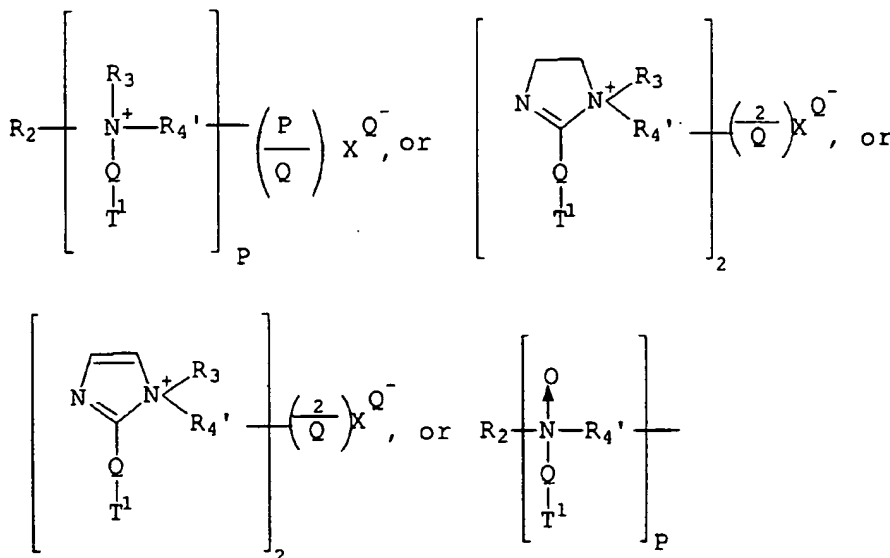
R₄, R₄' and R₄" and R₅, R₅' and R₅" are any (un)substituted acyclic or any (un)substituted mono or poly (hetero)cyclic organic group,

T¹ is an active substance radical,

T² and T³ are (the same or different) C₅-C₃₀ alkyl or alkenyl or aryl, X⁻ is a compatible anion.

9. A composition according to claim 8 wherein R₄ is (CH₂)_n or (CH₂-CH₂-O)_nCH₂-CH₂- and R₅ is C₁-C₇ alkyl or alkenyl or aryl and n is an integer between 1 and 4.

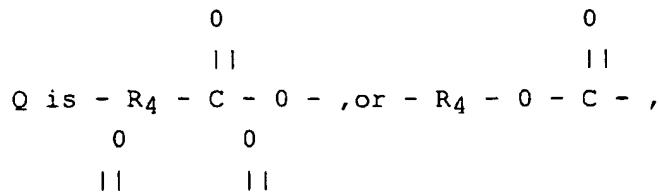
10. A composition according to claim 1 comprising a compound containing several nitrogens wherein the compound has the following structural formula:



or an amine precursor thereof

wherein :

R_2 is $Q''-T^1$ or $Q''-T^3$ or T^3 or R_6 ,



or $-R_4 - O - C - R_5 - C - O -$,

Q'' is defined as Q wherein R_4 is R_4'' and R_5 is R_5'' ,

R_3 and R_6 are the same or different C_1-C_4 alkyl or C_1-C_4 hydroxyalkyl or H,

R_4 , R_4' and R_4'' , R_5 , and R_5'' are any (un)substituted acyclic or any (un)substituted mono or poly (hetero)cyclic organic group,

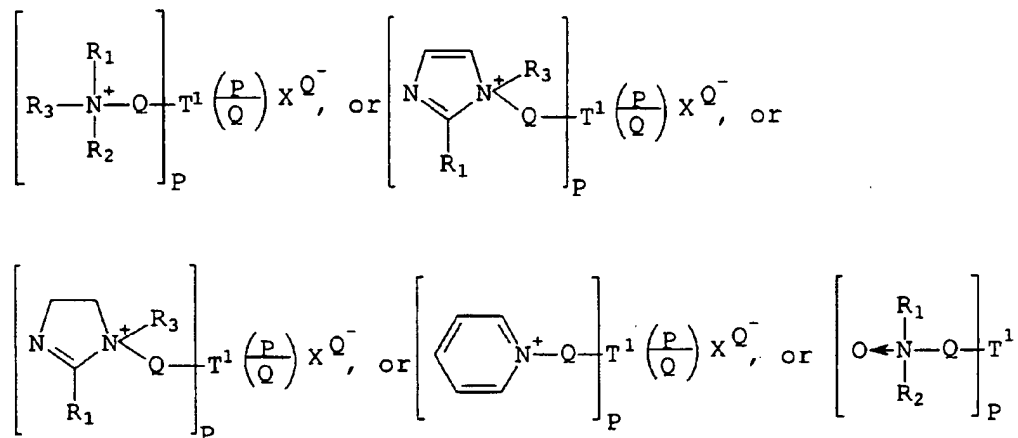
T^1 is an active substance radical,

T^3 is C_5-C_{30} alkyl or alkenyl or aryl, X^- is a compatible anion.

p and q are integers.

11. A composition according to claim 10 wherein R_4 is $(CH_2)_n$ or $(CH_2-CH_2-O)_nCH_2-CH_2-$ and R_5 is C_1-C_7 alkyl or alkenyl or aryl and n is an integer between 1 and 4.

12. A composition according to claim 1 comprising a compound containing several nitrogens, wherein the compound has the following structural formula:



or an amine precursor thereof

wherein :

R_1 is $Q'-T^1$ or $Q'-T^2$ or T^2 or R_6 ,

R_2 is $Q''-T^1$ or $Q''-T^3$ or T^3 or R_6 ,

wherein Q is $\begin{array}{c} 0 \\ || \\ -R_4-C-0- \end{array}$, or $\begin{array}{c} 0 \\ || \\ -R_4-0-C- \end{array}$,

or $-R_4-0-C-R_5-C-0-$,

Q' and Q'' are defined as Q wherein R_4 is R_4' or R_4'' and

R_5 is R_5' or R_5'' respectively,

R_3 and R_6 are the same or different C_1-C_4 alkyl or C_1-C_4 hydroxyalkyl or H,

R_4 , R_4' and R_4'' and R_5 , R_5' and R_5'' are any (un)substituted acyclic or any (un)substituted mono or poly (hetero)cyclic organic group,

T^1 is an active substance radical,

T^2 and T^3 are (the same or different) C_5 - C_{30} alkyl or alkenyl or aryl, X^- is a compatible anion.

p is an integer number between 1 and $\frac{MWT^1}{50}$, preferably

50

between $\frac{MWT^1}{1000}$ and $\frac{MWT^1}{100}$ and q is an integer.

13. A composition according to claim 12 wherein R_4 is $(CH_2)_n$ or $(CH_2-CH_2-O)_nCH_2-CH_2-$ and R_5 is C_1 - C_7 alkyl or alkenyl or aryl and n is an integer between 1 and 4.

14. A composition according to any of the preceding claims where T^2 and T^3 are (the same or different) C_{12} - C_{22} alkyl or alkenyl.

15. A composition according to any of the preceding claims wherein T^1 will generate an active substance selected from the class of acids or alcohols of natural or synthetic origin.

16. A composition according to any of the claims 1 to 14 wherein T^1 will generate an active substance selected from the class of hydroxy and/or carboxy functional perfume ingredients, bactericides, fungicides, anti perspirants, starch or modified starch, pesticides, insecticides, insect repellants or corrosion inhibitors.

17. A composition according to claim 16 which additionally contains conventional fabric conditioner or fabric softener matrix components and additives.

18. A composition according to claim 17 containing between 0.005% and 20.0% of active substance radical, preferably between 0.01% and 5.0% and most preferably between 0.02% and 2.0% of active substance radical.

19. A composition according to claim 17 which has a pH between 2.0 and 5.0.

20. A composition according to claim 16 which additionally contains conventional detergent matrix components and additives.

21. A composition according to claim 20 wherein X^- is a C7-C30 alkyl or alkenyl containing anion.

22. Use of a composition according to claim 17 in a fabric softener/conditioner matrix as a perfume delivery system, as a biocide delivery system, as a fungicide delivery system, as an antiperspirant delivery system, as an insecticide or insect repellent system or as an iron-aid delivery system.

23. Use of a composition according to claim 20 in a detergent matrix as a perfume, biocide, fungicide, antiperspirant, insecticide or insect repellent or as an iron-aid delivery system.

24. A composition according to claim 16 which additionally contains conventional matrix components or additives from a shampoo or hair conditioner or from a hard surface cleaner or from a perfume or deodorant or from an insecticide.

25. Use of a composition according to claim 24 as a perfume delivery system, a bactericide or insecticide/insect repellent delivery system, a fungicide delivery system, an antiperspirant delivery system, an anti-dandruff delivery system or a corrosion inhibitor delivery system.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US94/10748**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(6) : A61K 7/06, 7/32

US CL : 424/70, 401, 405

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 424/70, 401, 405

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US, A, 4,429,859 (STEINER ET AL.) 07 February 1984, columns 3-4, examples.	1-7
X	US, A, 4,767,547 (STRAATHOF ET AL.) 30 August 1988, columns 1-2, columns 4-5, claims.	1-13

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:	T	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
A document defining the general state of the art which is not considered to be part of particular relevance	X*	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
E earlier document published on or after the international filing date	Y*	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, each combination being obvious to a person skilled in the art
L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	G*	document member of the same patent family
O document referring to an oral disclosure, use, exhibition or other means		
P document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search

30 NOVEMBER 1994

Date of mailing of the international search report

10 JAN 1995

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